

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A method of testing a plant control system comprising:

providing a control system to be tested, the control system having a controller-I/O communication channel and field I/O connectors;

providing a test system;

coupling the test system to the control system in a manner which allows the test system to communicate with and drive the control system by sending and receiving signals via both the controller-I/O communication channel and the field I/O connectors;

decoupling the test system from the control system;

at least partially installing the control system in a plant to be controlled; and

utilizing at least a portion of the test system to validate the operation of the control system.
2. (Canceled)
3. (Previously presented) The method of claim 1 wherein validation of the control system involves coupling an I/O portion of the test system in place of at least some of the plant's sensors and actuators.
4. (Previously presented) The method of claim 1 wherein validation is accomplished by utilizing at least a portion of the test system to validate the operation of the control system by having the test system provide instructions and questions to one or more plant operators thereby instructing them to perform various operations and prompting them to

enter a description as to how the control system responded to the operations, and recording any operator entered descriptions.

5. (Original) The method of claim 4 further comprising a step of causing the test system to generate a report indicating which operations were performed and what the control system response was for any operations performed.
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Original) A plant sensor and actuator simulator for use in testing a plant control system comprising:

a configurator having a computer and software for entering and maintaining one or more databases including validation requirements and associated test procedures, each test procedure comprising one or more tests, each test comprising at least one signal to be generated by the simulator and transmitted to the control system being tested;

a plurality of I/O simulator modules detachably coupled to the configurator, at least some of the I/O simulator modules comprising one or more A/D converters;

communication channel connectors for communicatively coupling the configurator via a configurator network interface port to a network of which the controller of a control system to be tested is a part;

field I/O connectors for coupling the simulator to the field I/O connectors of a control system to be tested.

11. (Original) The simulator of claim 10 wherein the configurator databases comprise data on a plurality of plant sensors such that, for each control system sensor input, the configurator identifies the range of signals which can be produced by a sensor and identifies a series of signals to be used in testing the control system response to signals within and without entire range of signals.
12. (Previously presented) A method for training process operators comprising:

providing a plant comprising a human machine interface to a control system coupled to plant sensors and actuators and controlling a process;

disconnecting all of the sensors and actuators from the control system;

connecting a simulator to the control system in place of the sensors and actuators;

causing the simulator to simulate various plant events so that the operators can interact with the human machine interface as if such events were actually occurring.
13. (Original) The method of claim 12 wherein the simulator comprises a database of events and preferred responses, monitors operator responses to simulated events by monitoring the control system's internal state and/or outputs, compares the monitored response for a particular event to the preferred response to determine whether the operator succeeded or failed to provide the preferred response, and reporting on the operator's successes and/or failures in responding to the simulated events.